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come of an *hypothesis* which we have formed to facilitate our *view* of facts. Such hypotheses, if truly scientific and definitive, must follow what is called the principle of continuity; that is, they must attribute to the hypothetical entities they assume, such properties, and such only, as are not contradicted by our experience of "large" bodies. Perhaps this theory of research is wrong; but it is at least the one which has led to the greatest discoveries—even to the wave-theory of light. The conclusion of it is, not that the nondescript property of the ether referred to is a "great discovery," but rather that there is a very important problem presented here in connexion with the wave-theory of light, which if it cannot be explained *by reference to familiar established facts*, will ultimately render necessary a revision of the undulatory theory of light, in some such sense as took place when transverse vibrations were substituted for longitudinal.

But whether the author's analysis of the point in question is correct or not, the principle which it is used to establish, could be independently affirmed. If it is valid, then the whole history of science has been in vain. After all our struggles we have not really attained a scientific criterion of truth, and scientific criticism is stultified. Professor Stokes's solution of the problem, How shall research be conducted, gives free scope to the wildest vagaries of the spiritualist, and to the ignorant and incompetent of all classes, while it discredits the judgment of the trained critical inquirer and gives to every one, under the pretext of prejudice, the right to impugn the validity of scientific results. T. J. McCormack.

Aspects of Theism. By *William Knight*, LL. D., Professor of Moral Philosophy in the University of St. Andrews. London and New York: Macmillan & Co. 1893. Price, $2.25.

The twelve lectures which constitute this work were delivered at Dundee in 1870, at Salisbury in 1890, and at London in 1891. Its main conclusions were published in 1879 in Professor Knight's "Studies in Philosophy and Literature." The feature of the book is its statement that Theism must be treated as a problem of philosophy. No theory of things, the author justly argues, whether theological, scientific, or historical, which dispenses with philosophy, can have either an adequate basis or a root of endurance. The style of Professor Knight's work is remarkably clear and elegant—an excellence which is surpassed only by the outspokenness of its opinions.

In Professor Knight's view, though the ontological, cosmological, and teleological arguments all possess a germ of truth, each in itself is insufficient. His own argument or solution combines the points of view of *all* thought on this subject; it represents "the theistic view of the Universe as a focus at which the conclusions of "Speculative Philosophy, Science, Poetry, Art, History, and Religion meet—a "focus at which the personal and the impersonal view of the ultimate mystery com-"bine." His argument is full of beauty and charm. But it is more a *feeling* than an argument, and to appreciate fully its strength one must have personal experience of the moods and sentiments out of which it has grown. That is to say, one might convince oneself by it after one had reached the conviction, but hardly another, who was without it.

Remarking that Professor Knight's favorite term for God is "The Infinite," his argument might be briefly, but brokenly, restated as follows. The proofs of Theism are not philosophically recondite. They do not require any great or original speculative power to comprehend them. They are as patent to the "hewer of wood and the drawer of water" as to the philosopher; so much so in fact that intuitive evidence, above and beyond all other kinds of evidence, is "the impregnable fortress of Theism." He is best fitted for knowledge of God who brings to his task a heart that "watches and receives." There is going on in Nature an incessant apocalypse of the Infinite, which is a real disclosure of God as constant as the sunrise, in the apprehension of which the basis of Theism is laid. We might call this means of knowledge intellectual and moral second-sight. Poets [and, we might add, mystics] possess it in the highest degree. Instead of a conclusion, and this is the very core of Professor Knight's argument, Theism is a *premise* which has other proof than the evidence of ratiocination, and on which the human race carries about with it a vast and many-sided conviction, of which it knows not the evidence, but which is the outcome of momentary illuminations. The Ontologist and the Teleologist, in their pictures of God, unconsciously draw their own portraits; but the Intuitionalist, in his picture of God, only draws the image which he sees and which is revealed to him not as a "form of his mind's own throwing," nor as one due to the penetration of his Finite Spirit, but as an act of "gracious condescension" on the part of the Infinite. Further, and supplementarily, the evidence on which our conviction rests is cumulative. No one individual sees all of God; each sees only a part. Our idea of God is a *heritage of the human race*, to which all nations and all philosophies have contributed their quota. It may be added, also supplementarily, that although no limitations are admissible to circumscribe this idea, yet any epithet may be applied to the Infinite which helps us to understand it, and though we may now describe it as "It" and again as "Thou," yet, since we cannot worship an Impersonal or Absolute Being, we must put ourselves in intelligible relation with the Infinite and regard it not as an abstract essence, but as a real thing, which is best done by conjoining with it the notion of personality; in other words, "Thou" or "He" is preferable to "It."

Philosophically, the Infinite or God of Professor Knight assumes many forms, is in fact everything but the Finite, forming a kind of enlightened Pantheism. In so far as it exhibits itself as a result of the analysis of physical ideas it is a supreme Principle, Force, Essence, Energy, Being, the One beyond the Many, the Essence beneath Appearance, Substance within Phenomena, the Absolute beyond the relative. And as the supreme idea of force is will, this principle is a self-conscious Mind and Will. In this climax of research Metaphysics and Theism unite, and the result is God.

Professor Knight's idea seems to be that the Infinite or God is everything which exists, which is not the Finite, and, we may add, since he is a professed Dualist, it is also a few things which do not exist. The idea of the Infinite in his presentation, regarded as the correlative of the Finite, is the outcome of the doctrine of the relativity of knowledge. From this relation it follows, according to Professor Knight's thinking, that our notion of the Infinite is just as positive as our notion of the Finite; though it is not given us with the luminous clearness that its correlative is, nevertheless it is a real term and a real relation.

There are two kinds of metaphysics. The one which imports its abstract notions into reality, and the other which derives its abstract notions from reality. Professor Knight's reasoning is an instance of the former. He says, the Finite implies the Infinite, as the centre does a circumference, etc., etc. This is true as a *term of thought*, but it is not true as a term of reality. The Infinite as a positive existence follows no more from its correlative "Finite," than the truth of the converse of a logical or geometrical proposition follows from the truth of the proposition. The idea of our real space of three dimensions implies the idea of a space of four or *n* dimensions, but not its existence. Again we may form some notion of what is meant when we speak of infinite magnitude, but what is infinite *quality*? As a fact, we derive our notion of the Infinite from finite things; we have formed it as a help of thought; it is absolutely a negative notion. The fact of its being a correlative of the notion of Finite proves nothing; its nature cannot be deduced from a metaphysical relation, but must be deduced from the facts on the basis of which it was constructed. What "hewer of wood or drawer of water" has a clear notion of the Infinite as a necessity of thought! It is essentially a philosophical, theological, and mathematical idea. In the first two branches it may mean almost anything. In the last only has it been accurately defined and made use of as a real and serviceable idea.

The dualism of man and nature which Professor Knight upholds, when analysed, really indicates the separation of the notions of Finite and Infinite. Suppose, for instance, and the supposition is as allowable as the allegory of personality, that nature, including man, were a great machine in which the motion of one part determined the motions of all the other parts, so that the motion of a part of my brain determined the universe. Would there then be an Infinite? *I* would be God, man, and universe in one. This is an "idealistic" view. But the difficulty is, that the motions of my brain, materially, or spiritually my ideas, my volitions, do not determine the other parts of the universe. They only determine the parts of it which are included within the circumscription of what is termed my self or ego. Beyond it rises the non-ego, the (by me) undetermined part, the universe, the world, God. This undetermined part, compared with "my" determinable part, really is infinite. But why should we view it under the notions of personality, will, etc. One remarkable part of this phase of existence, mind, nature, or whatever it may be called, is, that its conduct is remarkably stubborn and uniform. Stones fall to the ground fluids seek their level, bodies grow cold, never hot, of themselves. If *I* determined these events, they would often take place differently. Consequently, if there is a mind or will which directs the universe, it is a remarkably single-minded one, and a rigid one, and so much higher than our feeble and wavering will that it would be much better if we should compare ourselves to it rather than make it an image of ourselves.

It only remains to be said that Professor Knight's solution of the problem of the universe is also a henistic one, in the sense in which that word was explained in the last *Monist*. The Infinite or God is a great sea of imperishable, invisible essence, in which man and nature, "all the choir of heaven and the furniture of the earth," float.

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THE EVANSTON COLLOQUIUM. LECTURES ON MATHEMATICS. By *Prof. Felix Klein.* Reported by Alexander Ziwet. New York and London: Macmillan & Co. 1894. Pp. 109. Price, $1.50.

One of the most prominent mathematicians who attended the recent Congress of Mathematics at Chicago was Prof. Felix Klein, of the University of Göttingen, Commissioner of the German University Exhibit at the Columbian Exposition. After the adjournment of the Congress, Professor Klein, by special request, held a colloquium on mathematics in the Northwestern University, at Evanston, Illinois. The meetings lasted from August 28 until September 9, during which interval Professor Klein delivered twelve lectures. As the lectures were delivered to members of the Mathematical Congress, they are somewhat in the nature of a supplement to the proceedings of the Congress, which will explain the incompleteness of their character. At the end of the lectures a translation is printed of the historical sketch, "Mathematics at the German Universities," contributed by Professor Klein to the great two-volume work of the German Exhibit, *Die deutschen Universitäten*, mention of which is made in *The Monist* of October, 1893. This sketch brings the subject down to 1870; it is the object of the Colloquium, therefore, to pass in review some of the principal phases of the most recent development of mathematical thought in Germany.

The first six lectures are largely geometrical in character. Lecture I is devoted to Clebsch, whose most valuable work is said to be his generalisation of the whole theory of Abelian integrals to a theory of algebraic functions with several variables; Lectures II and III, to Sophus Lie, whose forte is said to be the application of geometrical intuition to questions of analysis, best expressed in his earliest memoirs. Lecture IV is devoted to "The Real Shape of Algebraic Curves and Surfaces." Professor Klein sets up three chief types of mathematicians, namely: logicians, formalists, and intuitionalists. He classes himself among the third and first. The intuitionalist feature of his mind is exhibited in the present lecture, to the subject of which he has personally contributed much. The characteristics of the geometrical method as discussed in this lecture are that they give an actual